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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/271,447	03/18/1999	HIROAKI SATOH	400113/SAHIN	4160
23460	7590	04/23/2004	EXAMINER	
LEYDIG VOIT & MAYER, LTD TWO PRUDENTIAL PLAZA, SUITE 4900 180 NORTH STETSON AVENUE CHICAGO, IL 60601-6780			CLEVELAND, MICHAEL B	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/271,447

Applicant(s)

SATOH, HIROAKI

Examiner

Michael Cleveland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nojiri (U.S. Patent 6,329,111, hereafter '111) in view of Taylor (U.S. Patent 5,371,148, hereafter '148), Tanaka et al. (U.S. Patent 5,858,616), and Lipson et al. (U.S. Patent 4,239,849, hereafter '849).

'111 teaches a process for forming a pattern of fluorescent substance into the cell of a fluorescent substance display substrate comprising providing in the cell two separate layers which are i) a resin composition layer (A, 7) and ii) a photosensitive (see col. 7, lines 1-10) composition layer (B, 8) (Fig. 4a-4b) comprising comprise a photoinitiator (col. 7, lines 1-9), exposing the layers to light, developing the layers, and baking the developed layers (col. 4, lines 18-39), wherein the resin composition (A) layer comprises an acrylic polymer (a, col. 10, lines 28-67) having a weight average molecular weight preferably in the range of 20,000-150,000 (col. 11, lines 26-36) and an acid number of 90-260 mgKOH/g (col. 11, lines 37-50), an ethylenically unsaturated compound (b, col. 11, line 63-col. 14, line 19) and a fluorescent substance (phosphor d, col. 16, lines 11-29) and the resin composition layer (7) is disposed between the inside of the cell (formed by substrate 1 and walls 2) and the photosensitive resin composition layer (8), as shown in Fig. 4B. The photosensitive composition may also contain a polymerization inhibitor (col. 23, lines 11-16).

'111 teaches that the resin composition layer also includes (c) a photoinitiator in order to aid in the photopolymerization. Thus, '111 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the ethylenically unsaturated group, (d) the phosphor, and the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of

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photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the photopolymerizable composition of '111 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

Nojiri '111 and Taylor '148 are described above. '111 teaches that the viscosity of the photosensitive resin (A) should be $1-10^9$ Pa.s (col. 24, lines 27-34), but is silent as to the glass transition temperature. Thus, it does not teach a glass transition temperature of less than 30°C or not less than 30°C.

'616 teaches that the similar photosensitive phosphor-containing resins for application by laminating (see Fig. 3) It teaches identical viscosity ranges for the resin (col. 13, lines 31-40) to those of '111, and further teaches a preferred range of 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers or other components, such as plasticizers, with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer ('616, col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Nojiri '111, Taylor '148, and Tanaka '616 are silent as to the concentration of polymerization inhibitor, and therefore do not teach a concentration of 0.1-15 parts by weight/100 parts by weight of acrylic resin. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Lipson '849 teaches that in photopolymerizable compositions, polymerization inhibitors may be added in amounts of up to 5 parts by weight per 40-90 parts per weight of a binding agent which may be acrylic (col. 2, lines 1-23) (i.e., 0-12.5 parts by weight per 100 parts by weight of the binding agent). The subject matter as a whole would have been obvious to one

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of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

3. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '616 in view of Taylor '148 and Koike et al. (U.S. Patent 5,922,395, hereafter '395) and Lipson '849.

'616 teaches depositing a layer that is both a resin (A) composition layer (See col. 4, lines 36-45) and a photosensitive resin (B) composition layer (See col. 2, lines 26-62.) The resin composition includes (a) an acrylic resin is a copolymer with an acid value of 15-200 and a weight average molecular weight of 10,000-150,000 (col. 6, lines 46-59), (b) a phosphor (i.e., a fluorescent material) (col. 2, lines 26-34), and (c) an ethylenically unsaturated compound (col. 2, lines 53-61). The composition may contain a polymerization inhibitor (col. 13, lines 20-26). The composition is deposited in cells of a plasma display (col. 14, line 46-col. 15, line 7), exposed (col. 15, lines 8-50), developed (col. 15, lines 51-67), and baked (col. 16, lines 41-48; col. 17, lines 10-13).

The resin composition layer also includes an ethylenically unsaturated monomer and a photoinitiator in order to aid in the photopolymerization (col. 2, lines 53-61). Thus, '616 does not explicitly teach the use of a layer consisting essentially of (a) the acrylic polymer, (b) the phosphor, (c) the ethylenically unsaturated compound, and (d) the polymerization inhibitor.

'148 teaches that acrylic polymers (col. 3, lines 29-68) may be photopolymerized either with the addition of ethylenically unsaturated compounds and without the addition of photoinitiators (col. 7, lines 49-68). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have eliminated the photoinitiator from the photopolymerizable composition of '616 in order to have saved material costs or as a matter of convenience (e.g., if the materials were not available) with a reasonable expectation of success because '148 teaches that the components are not required for the photopolymerization of acrylic monomers.

'616 and '148 do not teach the formation of separate layers, wherein a photosensitive layer (B) is formed after a resin composition layer (A) is formed.

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Koike '935 teaches two equivalent embodiments of forming pigment layers for applications such as plasma display panels (col. 1, lines 7-9). In one (Figs. 1-2), a photosensitive pigment composition is deposited in the cells of the display panel, exposed and developed (col. 7, lines 8-29). In the other, a pigment composition layer (7) and a photoresist (i.e., a photosensitive resin) layer are applied. The photoresist layer is exposed, and both layers are developed (col. 8, line 42-col. 9, line 38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a photoresist layer, such as that of Koike '395's second embodiment, on top of the phosphor layer of Tanaka '616 before developing and exposure with the expectation of similar results because Koike '395 teaches the equivalence of depositing a photosensitive pigment layer, and depositing a pigment layer followed by a photoresist layer before development in the formation of plasma display panels.

The following comments refer to the teachings of '616:

Claims 20-22: The viscosity of the polymer composition is 1 to 500 Pa.s (i.e., 1000-500000 mPa.s). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polymers with similar viscosities to the desired viscosity in order to have reduced the need for viscosity adjusting additives. Such viscosity is controlled via the glass transition temperature of the acrylic polymer (col. 13, lines 17-29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the glass transition temperature in order to have achieved the desired viscosity.

Koike '395, Taylor '148, and Tanaka '616 are silent as to the concentration of polymerization inhibitor, and therefore do not teach a concentration of 0.1-15 parts by weight/100 parts by weight of acrylic resin. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Lipson '849 teaches that in photopolymerizable compositions, polymerization inhibitors may be added in amounts of up to 5 parts by weight per 40-90 parts per weight of a binding agent which may be acrylic (col. 2, lines 1-23) (i.e., 0-12.5 parts by weight per 100 parts by weight of the binding agent). The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping

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portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Tanaka '616, Taylor '148, and Lipson '849 each indicate the conventionality of using photoinitiators in photoresists. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated a photoinitiator in the separate photoresist film of Koike '395 in order to have sped the photopolymerization of the photoresist with a reasonable expectation of success because Tanaka '616, Taylor '148, and Lipson '849 each indicate the conventionality of using photoinitiators in photoresists.

Response to Arguments

4. Applicant's arguments filed 2/13/2004 have been fully considered but they are not persuasive.

Applicant argues that Taylor does not teach the use of a photopolymerization inhibitor alone. The argument is unconvincing because the claims do not require the use of a photopolymerization inhibitor. Even if the claims were amended to require the use of a photopolymerization inhibitor, the argument would be unconvincing because the inclusion of a photoinhibitor in a composition may be used to control the sensitivity of the composition without completely removing its photoactivity. See, e.g., Taguchi et al. (U.S. Patent 6,333,134, col. 2, lines 28-45).

Applicant's argues that Nojiri and Taylor teach that their resin layer is photopolymerized, but the inventive layer (A) is not. The argument is unconvincing because it is not commensurate in scope with the claims, which do not exclude the photopolymerization of layer (A).

Applicant argues that Lipson uses a photoinitiator along with a polymerization inhibitor. The argument is unconvincing because Lipson discusses the inclusion of a thermal polymerization inhibitor to prevent polymerization during drying and storage. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The argument does not address the teachings of Taylor '148 that a photoinitiator is not necessary.

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Applicant's declaration under 37 CFR 1.132 filed 2/13/2004 is acknowledged. Applicant argues that the use of 0.1 to 15 parts by weight of polymerization inhibitor and no photoinitiator renders compositions un-photopolymerizable. The argument is unconvincing because the showings of the declaration are limited to the use of the particular methyl methacrylate/n-butyl methacrylate/methacrylic acid copolymer, combined with tetraethylene glycol dimethacrylate, 2,2'-methylenebis(4-methyl-6-tert-butylphenol) (as the polymerization inhibitor), methyl ethyl ketone, and the listed phosphors and the use of 100 mJ/cm² of ultraviolet rays. Therefore, the declaration is not reasonably probative of all combinations of photopolymerizable polymers and does not reasonably demonstrate that the coating could not be polymerized by a stronger light source or a different wavelength of light, and therefore the declaration is not commensurate in scope with the claims, which are not limited to the particular composition listed on p. 3 of the declaration and which do not exclude the photopolymerization of layer (A).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant's argument's regarding Tanaka in view of Taylor, Koike, and Lipson are unconvincing because they only address Tanaka. They do not address the teachings of Koike that a layer can be patterned by making the layer itself photosensitive or alternatively by using a nonphotosensitive layer and patterning that layer with an overlying photosensitive layer.

Applicant argues that the claims exclude the photopolymerization of layer (A). The argument is incorrect. The claims do not exclude photopolymerization. Applicant appears to argue that the use of the term "consisting essentially of" referring to the components of resin (A) excludes photopolymerization. The argument is unconvincing because the term "consisting essentially of" refers only to the composition of layer (A) that is formed inside the cell, and does not refer to the steps of the process.

The Examiner has stated that Applicant's arguments regarding photopolymerization are contradicted by the specification which details the inclusion of a photopolymerization initiator and/or initiator assistant within resin (A) (p. 8, line 23-p. 9, line 22), thereby indicating that Applicant *does* photopolymerize the layer. Applicant argues that the cited passage does not

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contradict the arguments because the statement refers only to an embodiment of the invention not encompassed by the present claims. (The Examiner has taken the statement of an invention "not encompassed by the present claims" to be one which excludes photopolymerization of layer (A), but notes that the current claims *do* encompass photopolymerization of layer (A).) Furthermore, the argument is unconvincing because the quoted passage indicates that polymerization of layer (A) is necessary, and that a photoinitiator must be added if polymerization does not occur.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Tuesday-Friday and alternate Mon, 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Cleveland

Patent Examiner

April 19, 2004